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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/611,556	07/02/2003	Laure Simonot	033818-003	6002

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EXAMINER

WYROZEBSKI LEE, KATARZYNA I

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 04/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/611,556

Applicant(s)

SIMONOT ET AL.

Examiner

Katarzyna Wyrozewski

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-80 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-80 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

In view of applicant's amendment and request for continued examination following office action is non-final.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-80 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As currently amended, present independent claims require that the amount of silicon carbide be more than 50 % by weight. At the same time, following claims indicated that the amount of SiC is in a range of 30-200 pbw and greater than 50 pbw. Since dependent claims provide required amount in different units as the independent claims it is not clear if the dependent claims further narrow down the scope of the independent claims. For example, is 30 pbw of SiC greater than 50 % by volume. For time being the examiner will treat the claims as if they do narrow the claims. Therefore amount of SiC of 30 pbw or more will be treated as being above 50 % by volume. Further independent claims read on amounts of SiC in 60 or 70 pbw and not by volume.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 2, 4, 5, 7-19, 21, 22, 24-34, 36, 37, 39-49, 51, 52, 54-80 are rejected under 35 U.S.C. 102(e) as being anticipated by WANG (US 6,469,089).

The prior art of WANG discloses rubber composition for use in tires. Although the prior art of WANG does not specifically list tire tread as part of the tire for which such composition is utilized, it discloses that the composition has good traction and improved wet skid resistance, a properties that have to be inherent to the tire tread. Use of such composition in tire treads is therefore more than implied.

The composition of WANG comprises SSBR (TABLE 1), silicon carbide, additional reinforcing fillers and that include silica and carbon black as well as coupling agent Si-69 otherwise known as bis(triethoxy silylpropyl) tetrasulfide.

Silicon carbide fillers disclosed are from Nanomaterials Research Corporations known as PT802J and BPT8044-1. Under the Table their BET surface was disclosed to be 31.9 and 55.9

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m²/g (see under the Table). Although the exact particle size of this silicon carbide was not disclosed, company's website can provide such information. The website for product was underdevelopment, however (see attached) company's definition of nanoparticle is that having particle size of less than 100 nm. It is further examiner's position that although the disagglomeration rate of the SiC of the prior art of WANG is not disclosed, such property will be inherent for the following reason. The disagglomeration rate depends on properties such as BET, particle size and Moh's hardness and which properties lie squarely in the middle of the ranges required by the present invention. Therefore the rate at which SiC of the prior art of WANG disagglomerates is also bound to be inherent.

Table 4 of WANG teaches that the SiC can be utilized in 32 pbw. However higher amounts can also be contemplated because the overall amount of reinforcing filler can be as high as 200 phr.

Silica of the prior art of WANG preferably has BET surface of at least 80 m²/g and includes ZEOLSIL, CABOSIL, HI-SIL and the like (col. 6, lines 46-51). Silica utilized in examples includes HISIL 532 and SILENE 732D.

Carbon black of the prior art of WANG includes N 234 carbon black listed in the TABLE I of WANGE.

Total amount of the reinforcing filler of the prior art of WANG, in preferred embodiments is in a range of 20-200 phr and more preferably 40-120 phr.

TABLE 1 of WANG also discloses that the rubber composition in fact contains mixture of SSBR and BR. From the Firestone Website, DURADENE 715 used in the example has bound styrene content of 23.5 and vinyl content of 46%, and Tg of -39°C (see attachment). Although

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the amount of trans bonds was not disclosed on the website, such is considered inherent for the following reasons. T_g, which is glass transition temperature of the rubber depends on specific content of the rubber such as percentage of each monomer and the type of monomer. Since all these characteristics of the DURADENE lie squarely in the middle of the ranges claimed in the present invention, so will the content of 1,4-trans bonds.

The TAKTENE 1203 rubber of prior art of WANG according to the BAYER website is a cis-1,4 polybutadiene having cis content of >96 (please see attachment).

Additional rubber of the prior art of WANG includes further polyisoprene, high vinyl butadiene, cis-1,4 polybutadiene and the like (col. 4, lines 22-27).

In the process of the prior art of WANG, the composition is mixed at a temperature having range of 120-180°C in order to be extruded or molded into an article (col. 8, lines 1-4)

In the light of the above disclosure, the prior art of WANG anticipates requirements of claims rejected above.

5. Claims 1-80 are rejected under 35 U.S.C. 102(e) as being anticipated by VISEL (US 6,121,346) in view of evidence given in WANG (US 6,469,089).

The prior art of VISEL discloses composition for tire tread comprising nanoparticulate fillers.

The composition of prior art of VISEL comprises rubber that includes SSBE (col. 3, lines 10-15 having bound styrene content of 5-50. Polybutadiene rubber of VISEL is cis-1,4 polybutadiene having cis content greater than 90% (col. 3, lines 27-37).

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Coupling agent of the prior art of VISEL are polysulfurized alkoxy silanes, wherein the most preferred coupling agent is bis(triethoxy silylpropyl) tetrasulfide (col. 6, lines 65-67).

Filler of the prior art of VISEL is a mixture of fillers having different particle sizes. The total content of the filler is 1-250 phr wherein 1-30 phr of the filler has particle size of 1-16 nm and 70-99 phr of the filler has particle size of 17-500nm (claim 1 of VISEL).

Fillers include silica, alumina, carbon black, alumina, silicon carbide and the like and can be utilized as both small and large particle size fillers but they have to be different (col. 3, line 62 – col. 4, line 5). Therefore if carbon black is utilized as small particle size filler, SiC and silica or alumina can be utilized as large particle size filler, especially when the particle size of specific silicon carbide of VISEL is disclosed to be 5-150 nm and is used as large particle size filler (col. 5, lines 9-12). The BET surface of the reinforcing fillers for silica in the prior art of VISEL is in a preferred range of 50-140 m²/g (col. 4, lines 45-49). The BET of SiC although not disclosed would also be approximately in the same for one specific reason. The filler in order to perform as reinforcing agent has to have BET value within certain range. As evidence, that range has already been disclosed in the disclosure of WANG. As a result disagglomeration rate is also inherent.

In the process of VISEL, the composition is mixed at a temperature having range of 140-190°C (claim 14) in order to be molded into an article.

In the light of the above disclosure the prior art of VISEL anticipates requirements of claims rejected above.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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9. Claims 3, 6, 20, 23, 35, 38, 50, 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over WANG (US 6,469,089) in view of VISEL (US 6,121,346).

The discussion of the disclosure of the prior art of WANG from paragraph 4 of this office action is incorporated here by reference.

The difference between the present invention and the disclosure of the prior art of WANG is in the amounts of the carbon black and silicon carbide.

The discussion of the disclosure of the prior art of VISEL from paragraph 5 of this office action is incorporated here by reference.

The properties that are detrimental to the tire treads include good traction and skid resistance. These properties are the goal of the two prior art disclosures, which outside of the amounts of the filler disclose exactly the same types of rubber, coupling agent, curing agents and the same range of mixing temperatures and both claim to achieve their goals.

In the light of the above disclosures it would have been obvious to one having ordinary skill in the art at the time of the instant invention to utilize the composition of WANG and the amounts of the fillers in VISEL and thereby obtain the claimed invention. Use of carbon black and silicon carbide as disclosed in VISEL would still provide tire tread composition having excellent skid resistance.

In the response dated 2/16/2005 the applicants raised following arguments:

a) The prior art of WANG does not anticipate the present claims since it does not teach the amount of SiC to be greater than 50 vol. %

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With respect to the above argument, as indicated in paragraph 2 of this office action, claim 2 is being read as narrowing the independent claim 1 (as one example). Therefore 30 pbw reads on 50 vol % unless the applicants amend the claims. The prior art of WANG will be reassessed then.

b) WANG teaches that majority of the reinforcing filler is carbon black.

The above argument is not commensurate with the scope of the claims. Ratios of CB to SiC is not an issue.

c) The footnote attached to the office action mailed on 7/15/2004 did not identify the products in Table 1 of WANG.

With respect to the above arguments, the two products of WANG are SiC BPT series and PT series with following batch numbers. The series of SiC utilized in WANG is therefore the series on the footnote.

d) The applicants have been unable to locate in the disclosure of WANG amounts of SiC higher than 60 phr or 70 phr.

See col. 7, lines 25-29.

e) The prior art of VISEL does not teach BET of SiC and relying on evidence in '089 is improper, since VISEL would not use particle size below 10 nm.

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With respect to the above argument, according to teachings of VISEL, SiC is particularly utilized as large particles (col. 5, lines 9-11) having particle size of 5-150 nm. Evidentiary reference relied upon is therefore correct, since the particle size of SiC in VISEL and in '089 overlap, especially for the PT series SiC, wherein the BET for PT series is in a range of 5-40 m²/g and not as applicants indicated under 20 m²/g.

f) Combination of teachings of VISEL and WANG fails to teach present invention.

See answers to arguments a-e.

g) The present invention provides unexpected results over known SiC.

The tests disclosed in the specification are viewed as inconclusive for following reasons:

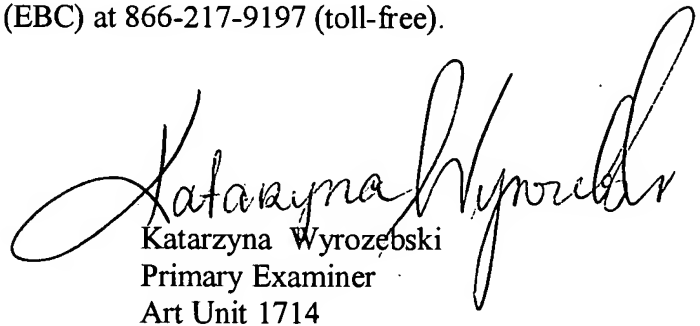
- I) It is not clear what exactly as "known" silicon carbides referred to by the applicants, i.e., what are their properties compared to the SiC of the present invention.
- II) What type of results are actually compared? There is no numerical data that the examiner can utilize as guidance.
- III) How do the unexpected results or comparative SiC related to the prior art so that applicants examples could overcome it?

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katarzyna Wyrozebski whose telephone number is (571) 272-1127. The examiner can normally be reached on Mon-Thurs 6:30 AM-4:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Katarzyna Wyrozębski
Primary Examiner
Art Unit 1714

April 13, 2005